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Medication History Lab and Assessment using the Medication Mysteries Infinite Case Tool

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Abstract

Introduction: Teaching medication history taking or medication reconciliation to students requires practice for students to achieve competency. Practice makes students more confident with the process, but multiple practice opportunities require multiple cases, and creating these new cases can be a tedious and time-consuming process. **Methods:** The Medication Mysteries Infinite Case Tool was designed to produce random patient cases using game-like features to allow students to practice medication history taking and medication reconciliation without the need to use and train standardized patients. The tool was created using a random draw card-based system to determine patient personality attributes, drugs they are taking, and confusions they have about their drug-taking behavior. This tool is used in a lab dedicated for the purpose of practicing medication history taking with students being assessed via simulation with standardized patients. This tool is currently used at the University of Florida College of Pharmacy as part of a training program for first-year pharmacy students. **Results:** Since 2011, seven classes of first- and second-year pharmacy students have participated in this lab. Each year's class contained an average of 280 students divided into lab groups of 18-24 students. In our initial offering of the lab and assessment, 200 students on three campuses completed the individual assessments following the laboratory session. Fifty-eight percent achieved excellence, and 39% achieved competence on the individual assessment. Only 3% were assessed as being deficient on their performance and were required to repeat the assessment. Overall, 86.8% agreed or strongly agreed that the MMICT was an excellent way to experience how to reconcile medication. **Discussion:** Students enjoy the practice and become proficient with the skills they learn through this process as evidenced by increased self-efficacy and achieved competence on a standardized assessment. The tool and the research associated with the outcome were awarded with the 2012 American Association of Colleges of Pharmacy Innovations in Teaching Award.

Keywords

Simulation, Standardized Patients, Medication History, Game, Case Study, Medication Reconciliation, Pharmacy

Educational Objectives

By the end of this module, learners will be able to:

1. Use patient interviews to collect basic subjective and objective evidence and data related to patients, their medications, their allergies or adverse reactions, and any accompanying disease.
2. Interview patients using an organized structure and specific questioning techniques.
3. Actively listen and ask appropriate open- and closed-ended questions to gather information.
4. Demonstrate attributes that promote a professional therapeutic relationship with patients and their families (e.g., empathy).

Introduction

In 2010, a curricular change at the University of Florida College of Pharmacy led to students being assigned to ambulatory centers, where their responsibilities included medication history taking and

Appendices

- A. Medication Mysteries Patient Instructions.pdf
- B. Medication Mysteris Patient Demographic Sheet.pdf
- C. Medicaton Mysteries Board .pdf
- D. Drug Cards.pdf
- E. Confusion Cards.pdf
- F. Personality Cards.pdf
- G. Medication History Lab Facilitator's Guide.docx
- H. Medication History Lab Student Instructions.pdf
- I. Medication History Lab Rubric.docx
- J. Medication History Form .docx
- K. Medication History Assessment Guide.docx
- L. Case Scenarios for Assessment.pdf
- M. Assessment Checklist.docx

All appendices are peer reviewed as integral parts of the Original Publication.

medication reconciliation. No formal training process was in place to provide education to these students before their experiences, so faculty were tasked with training students to complete medication histories and medication reconciliations with patients in clinical settings. This lab and the Medication Mysteries Infinite Case Tool (MMICT) were created to provide a mechanism for students to practice until they are confident with taking a medication history or doing medication reconciliation without having to write new cases each time. The tool was designed to allow student groups to create case studies on the fly using a card-based system for randomization. The tool contains card decks specifying patient personalities, drugs the patient may be taking, and any confusions or discrepancies that may be occurring in the patient's drug regimen. Drugs for the tool were determined by referencing the top 200 prescribed drugs in the U.S. and by cross-referencing with the experiences of the faculty. The personalities and confusion themes represented were those commonly identified by the faculty in their practices.

Any level student of any health profession where medication history-taking skills would be required should be able to use this lab and tool to practice their skills. The included lab setup materials are specific to medication history or medication reconciliation, but the tool could be used to practice communication skills in general.

The use of educational games in pharmacy education is becoming more prevalent as instructors look to create innovative ways of delivering course material. Descriptions of games used in pharmacy education are found in several curriculum areas, including the basic clinical sciences, patient care electives, and advanced pharmacy practice experiences.¹⁻⁸ The literature supports the concept that students enjoy playing educational games; however, there is some debate about how much educational games improve student learning.^{2,7} The outcomes of the use of this tool and lab setup were published in the *American Journal of Pharmaceutical Education*.⁹ We know of no other similar tool in existence.

Methods

When designing this lab experience we wanted to find a way to make the lab address the following criteria:

1. We wanted to fulfill the educational objective of demonstrating student competence by completing a medication history or medication reconciliation.
2. We wanted the practice cases the students engaged in to be unique enough to keep them moving forward in developing their skills.
3. We wanted the lab to be fun so that engagement in the practice cases would be high.

Given these criteria, we chose a self-directed, game-based approach.

Our lab was designed to be used by 18-24 students with one to two facilitators. The lab was scheduled for 2 hours total, with most of the time used for student practice. Only 5-10 minutes were used for orientation, question answering, and follow-up. Students were arranged in groups of three so that each member of the group could fulfill the roles of pharmacist, patient, and observer.

All materials necessary to implement this lab and assessment are included in the appendices. The appendices are divided into three sections.

The MMITC pieces include the patient instructions (Appendix A) detailing how the student playing the part of the patient uses the tool to create a patient case; the patient demographic sheet (Appendix B), which is used by the student playing the part of the patient to record data about his or her character for the role-play; the board (Appendix C), which contains a short version of the instructions and a place for students to organize their cards; and the drug (Appendix D), confusion (Appendix E), and personality (Appendix F) cards, which should be printed out and made available to learners during the session.

The lab setup instructions and paperwork include the medication history lab facilitator's guide (Appendix G), which details the purpose and set up of the lab; the medication history lab student instructions (Appendix H), which explain each student's role and how the lab will run; the medication history lab rubric (Appendix I) for use by the student playing the part of the observer to provide feedback to the student

playing the part of the pharmacist; and the medication history form (Appendix J), used to provide a framework and documentation area for the student playing the part of the pharmacist.

The assessment setup instructions and paperwork include the medication history assessment guide (Appendix K), detailing the purpose and setup of individualized assessment of students' postlab experience; the case scenarios for assessment document (Appendix L), containing three scenarios with both student and standardized patient versions, along with completed versions of medication history forms; and the assessment checklist (Appendix M) for use by the standardized patient to assess the students' proficiency during the scenario and provide them feedback.

Not included in this material is any didactic prework that would present the students with information on how to do a medication history or medication reconciliation. This work focuses on practice and competency assessment.

Results

Since 2011, seven classes of first- and second-year pharmacy students have participated in this lab. The lab was moved to the first year in 2015. Each year's class contained an average of 280 students. These classes were divided into lab groups of 18-24 students. Each lab was facilitated by one to two facilitators who were either faculty, practicing pharmacists, residents, graduate students, or senior pharmacy students.

Assessments for each lab were completed individually on subsequent days. Each assessment was scheduled for 15 minutes, with feedback provided to the students regarding their performance. The standardized patients were role-played by a combination of faculty, residents, graduates, and senior pharmacy students. All lab facilitators and standardized patients participated in medication history taking and reconciliation as part of their regular practice.

Assessments were performed by the standardized patient using the 17-question checklist. In our initial offering of the lab and assessment, 200 students on three campuses completed the individual assessments following the laboratory session. Fifty-eight percent achieved excellence, and 39% achieved competence on the individual assessment. Only 3% were assessed as being deficient on their performance and were required to repeat the assessment.

Students were also surveyed following the lab and assessment to evaluate both changes in self-efficacy for the ability-based outcomes of the lab and their general satisfaction with the learning activity. A large majority of students felt the laboratory session was valuable (96.2%) and that the information and skills learned during the laboratory session could be applied in the real world (96.2%). Overall, 86.8% agreed or strongly agreed that the MMICT was an excellent way to experience how to reconcile medication. A strong majority of students (94.3%) felt the laboratory session should be retained in the curriculum. All students surveyed agreed or strongly agreed that the individual assessments were fair. Nearly all students agreed or strongly agreed (98.1%) that the feedback provided by the faculty member at the end of the individual assessment was valuable and gave them insight on how to improve their medication history interview. Students' self-efficacy significantly improved after using the MMICT and completing the laboratory session.

Discussion

We created this lab to train students to take medication histories. We originally created the MMICT to make the process of case creation for the lab more palatable to us as faculty. During the process of creation, we realized that use of the tool would help with engagement in the lab. Having conducted this lab over the course of 5 years with hundreds of students, it is apparent when facilitating that the students actually have fun. The fact that they are having fun changes the way they view the experience. This lab nearly runs itself because the students are so engaged. A few clarifications or directions here or there during the lab are all it takes to make the lab work well.

We have found that while the instructions can be used without comment to start the students off, a brief verbal explanation of the expectations of each role of the triad at the beginning of the lab saves time and

questions. In our experience, even the more shy students can play the part of the patient well enough to give their partners a good experience.

In addition to creating cases to teach medication histories or reconciliation, the MMITC has other possible uses. It has been used to help construct cases that focused on the communication aspect of the role-playing rather than the technical aspect of a medication history for our professional communication course. While we used an ambulatory setting for the cases and therefore a drug and confusion setup that worked well for that setting, we have considered that by changing some of the drugs and confusions, we could change the focus or setting of the case. Some ideas that have been put forward include the following:

1. Changing some drugs to be IV for transitions of care within a hospital.
2. Changing some of the confusions to be for discharge counseling on new drugs.
3. Changing some of the personalities to include caregiver scenarios where the patient may not be an available source.
4. Pairing the caregiver scenario with a phone communication scenario where the students follow up on a medication list with a local pharmacy as part of a hospital admission.

We are also considering a web-based version of the MMITC. We wonder whether the loss of the hands-on experience with the cards and dice will change the students' view of the use of the tool and may investigate this in the future.

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Ethical Approval

This publication contains data obtained from human subjects and received ethical approval.

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